



National Ocean Service (/)

OCEAN FACTS
(/FACTS/)

EXPLORE
(/TOPICS/)

EDUCATION
(/EDUCATION/)

NEWS
(/NEWS/)

MULTIMEDIA
(/MULTIMEDIA/)

ABOUT
(/ABOUT/)

TIDES &
CURRENTS
(/FACTS/FIND-
TIDES-
CURRENTS.HTML)

NAUTICAL
CHARTS
(/FACTS/FIND-
CHARTS.HTML)

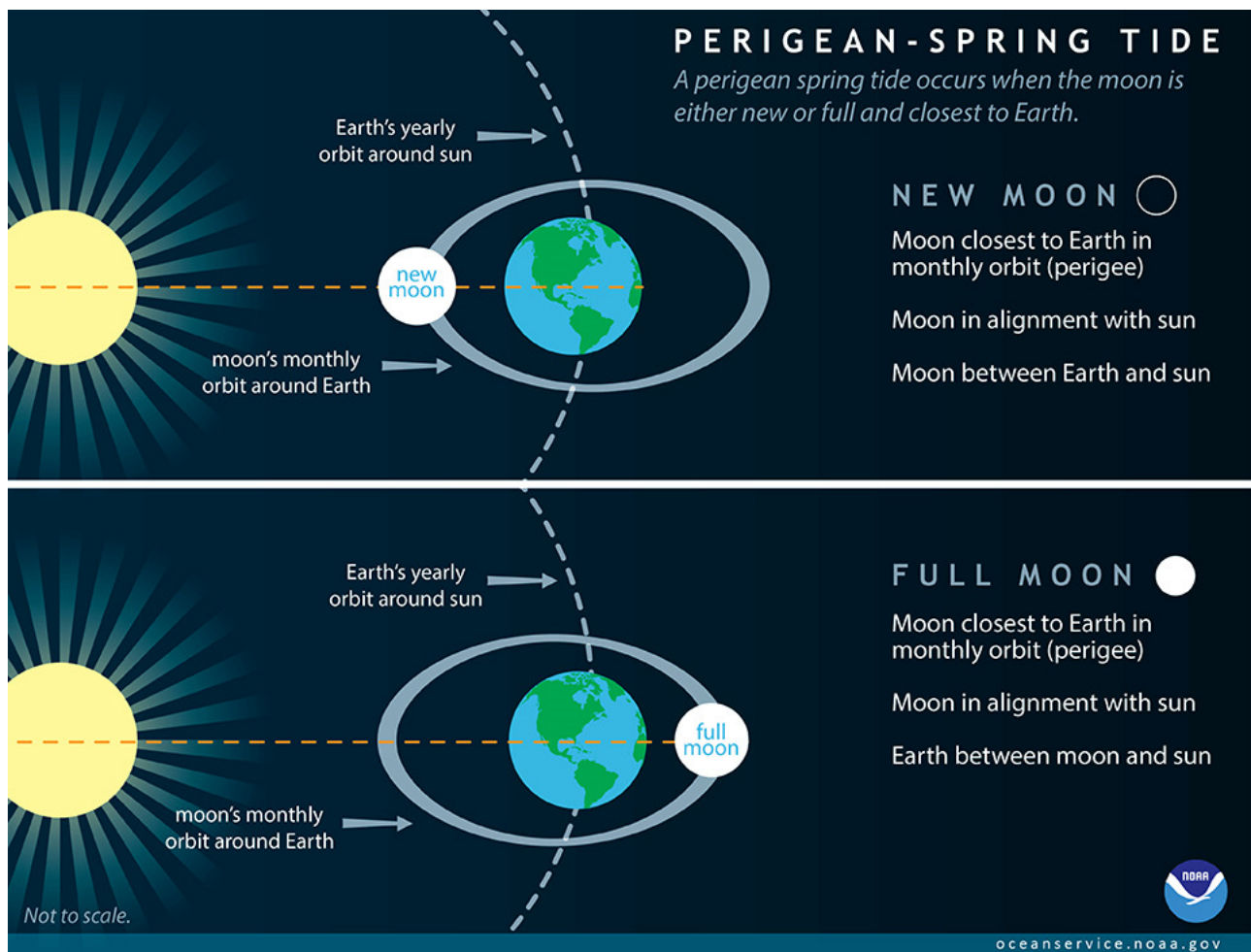
PODCASTS
(/PODCAST/)

MOBILE SITES
(/MOBILE.HTML)

HOME (/) » OCEAN FACTS (/FACTS/) » WHAT IS A PERIGEAN SPRING TIDE?

What is a perigean spring tide?

A perigean spring tide occurs when the **moon is either new or full and closest to Earth.**



(/facts/perigeanspringtide-large.jpg)

About three or four times a year (in the spring and the fall), the new or full moon coincides closely in time with the perigee of the moon—the point when the moon is closest to the Earth. These occurrences are often called 'perigean spring tides.' The difference between 'perigean spring tide' and normal tidal ranges for all areas of the coast is small. In most cases, the difference is only a couple of inches above normal spring tides.

In order to understand the phenomenon called a 'perigean spring tide,' you first have to know that the gravitational pull of the moon and the sun cause tides. Tides are actually long-period waves that roll around the planet as the ocean is 'pulled' back and forth as the moon and the sun interact with the Earth in their monthly and yearly orbits.

The next thing you need to know is that the moon follows an elliptical path around the Earth in its monthly orbit, and the Earth follows an elliptical path in its yearly orbit around the sun. This means that, at times, the moon and the sun are closer to Earth. At other times, they are farther away. What happens when the moon and the sun are close to the Earth? You guessed it: the gravitational pull they exert is stronger, resulting in slightly higher tides.

While both the moon and the sun influence tides, the moon plays a much larger role because it is so close to the Earth. Its gravitational pull is about twice as strong as that of the sun. Now consider these two cases:

The Effect of a Full or New Moon

During full or new moons—which occur when the Earth, sun, and moon are nearly in alignment—average tidal ranges are slightly larger. This occurs twice each month. The moon appears new (dark) when it is directly between the Earth and the sun. The moon appears full when the Earth is between the moon and the sun. In both cases, the gravitational pull of the sun is 'added' to the gravitational pull of the moon on Earth, causing the oceans to bulge a bit more than usual. This means that high tides are a little higher and low tides are a little lower than average. These are called 'spring tides ([springtide.html](#)).'

The Effect of Perigee

Once every 28 days, the moon reaches a 'perigee,' its closest point of approach to the Earth. This is the point at which the gravitational pull of the moon is strongest. During these periods, there will be a slight increase in the average range of tides.

What happens when a full or new moon coincides with perigee?

Full or New Moon + Perigee

About three or four times a year, the new or full moon coincides closely in time with the perigee of the moon—the point when the moon is closest to the planet. These occurrences are often called 'perigeon spring tides.'

The difference between 'perigeon spring tide' and normal tidal ranges for all areas of the coast is small. In most cases, the difference is only a couple of inches above normal spring tides. The largest difference occurs in certain areas of the Alaska coast where the range of the tide may be increased by around six inches (15.24 centimeters). But considering that these areas have an average tidal range of more than 30 feet (9.14 meters), the increase is but a small percentage of the whole (less than a two percent increase).

Perigeon Spring Tides And Coastal Flooding

Major coastal flooding doesn't always occur whenever there is a perigeon spring tide, however perigeon spring tides may often cause minor coastal flooding in some very low-lying areas. Major coastal flooding typically occurs in response to strong onshore winds and barometric pressure changes from a coastal storm. If a storm strikes during a perigeon spring tide, flooding could be significantly worse than it otherwise would have been. In some instances, perigeon spring tides have coincided with a shift in offshore ocean circulation patterns and large scale shifts in wind that have resulted in unexpected coastal flooding. It is expected that occurrences of minor "nuisance" flooding ([/facts/nuisance-flooding.html](#)) at the times of perigeon spring tides will increase even more as sea level rises relative to the land.

NOAA's tide and tidal current predictions (<http://tidesandcurrents.noaa.gov/>) take into account

astronomical considerations due to the position of the moon and the sun.


Search Our Facts

search	Q
--------	---

Get Social



More Information

 Download Infographic (/facts/perigeanspringtide.pdf)

Center for Operational Oceanographic Products and Services (<http://tidesandcurrents.noaa.gov/>)

What is a spring tide? (springtide.html)

Tide Predictions (http://tidesandcurrents.noaa.gov/tide_predictions.shtml)

Real-Time Tide Data (http://tidesandcurrents.noaa.gov/station_retrieve.shtml?type=Tide%20Data&state=All%20Stations&id1=)

Historic Tide Data (http://tidesandcurrents.noaa.gov/station_retrieve.shtml?type=Historic+Tide+Data)

Tides Online (<http://tidesonline.nos.noaa.gov/>)

Tide Station Index (http://tidesandcurrents.noaa.gov/station_index_map.shtml)

Sea Levels (<http://tidesandcurrents.noaa.gov/sltrends/index.shtml>)

Contact Us (<mailto:nos.info@noaa.gov>)

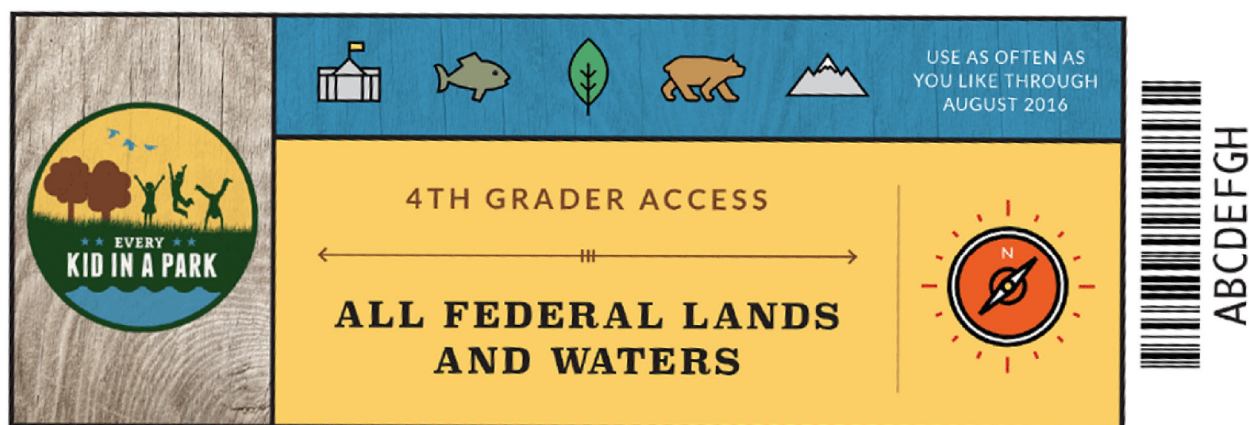


GET IN TOUCH

Thank you for visiting NOAA's National Ocean Service. Take our website **customer satisfaction survey (/survey.html)**. We welcome your ideas, comments, and suggestions.

- 🔗 [Ocean Facts \(/facts/\)](/facts/)
- 🔗 [Explore Ocean Topics \(/topics/\)](/topics/)
- 🔗 [Education \(/education/\)](/education/)
- 🔗 [News & Features \(/news/\)](/news/)
- 🔗 [Press Releases \(/newsroom/\)](/newsroom/)
- 🔗 [Multimedia \(/multimedia/\)](/multimedia/)
- 🔗 [RSS Feeds \(/rss.html\)](/rss.html)
- 🔗 [About Us \(/about.html\)](/about.html)

COME VISIT US



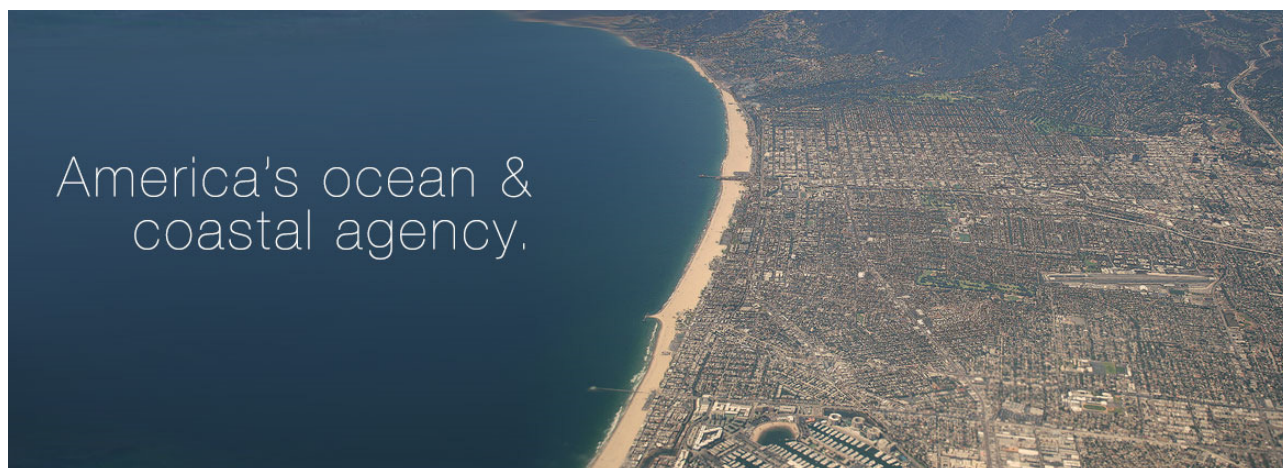
[\(/ekip/\)](/ekip/)

Every Kid in a Park [\(/ekip/\)](/ekip/)

Every Kid in a Park is a federal government effort to get every fourth grader in the nation into public lands and waters during the school year. Come experience our special ocean, coastal, and Great Lakes places — all NOAA public spaces and visitor centers offer free admission!

Learn more → [\(/ekip/\)](/ekip/)

ABOUT US



(/about/)

National Ocean Service (/about/)

At NOAA's National Ocean Service, we translate science, tools, and services into action to address threats to coastal areas such as climate change, population growth, port congestion, and contaminants in the environment—all working towards healthy coasts and healthy economies.

Explore What We Do → (/topics/)

THANKS FOR STOPPING BY!



(<http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Finstagram.com%2Fnoaaocan>)



(<http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Ftwitter.com%2Fnoaaocan>)



(<http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Ffacebook.com%2Fusoceangov>)



([http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Fwww.pinterest.com%2Fnoaaocan%](http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Fwww.pinterest.com%2Fnoaaocan%2F)

2F) ([http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Fwww.youtube.com%](http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Fwww.youtube.com%2Fusoceangov)



2Fusoceangov) ([http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%](http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Fwww.flickr.com%2Fphotos%2Fusoceangov)



2Fwww.flickr.com%2Fphotos%2Fusoceangov)

Web site owner:

National Ocean Service

Contact Us (/contact.html) | NOAA (<http://www.noaa.gov>)

Department of Commerce (<http://www.commerce.gov>)

[Take Our Survey \(/survey.html\)](/survey.html) [Site Map \(/sitemap.html\)](/sitemap.html)

[Contact Webmaster \(mailto:nos.web@noaa.gov\)](mailto:nos.web@noaa.gov) [Report an Error \(/contact.html#contact\)](/contact.html#contact)

[Disclaimer \(/disclaimer.html\)](/disclaimer.html)

For NOS Employees (<http://oceanservice.noaa.gov/exit.php?url=https%3A%2F%2Fsites.google.com%2Fa%2Fnoaa.gov%2Fnos-for-employees%2F>)

[NOS Program Offices \(/programs/\)](/programs/) [Website directory \(/websites/welcome.html\)](/websites/welcome.html)

[Information Quality \(http://www.cio.noaa.gov/services_programs/info_quality.html\)](http://www.cio.noaa.gov/services_programs/info_quality.html)

[Acknowledgements \(/about/acknowledgements.html\)](/about/acknowledgements.html)

[Freedom of Information Act \(http://www.rdc.noaa.gov/~foia/\)](http://www.rdc.noaa.gov/~foia/) [Privacy Policy \(/privacy.html\)](/privacy.html)

Revised: March 17, 2016 | You are here: <http://oceanservice.noaa.gov/facts/perigean-spring-tide.html>